

BCM847BS-AU

NPN General Purpose Dual Transistor

VOLTAGE 45 Volt **POWER** 150 mWatt

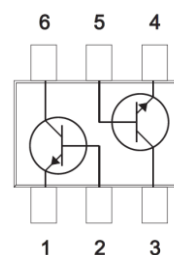
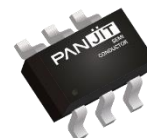
FEATURES

- General purpose amplifier applications
- NPN epitaxial silicon, planar design
- AEC-Q101 qualified
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

MECHANICAL DATA

- Case : SOT-363, Plastic
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.006 grams

SOT-363



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Units
Collector - Emitter Voltage	V_{CEO}	45	V
Collector - Base Voltage	V_{CBO}	50	V
Emitter - Base Voltage	V_{EBO}	6	V
Collector Current - Continuous	I_C	100	mA

THERMAL CHARACTERISTICS

Parameter	Symbol	Value	Units
Total Device Dissipation Per Device FR-5 Board ^(Note 1) $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	300 150 3	mW mW mW/°C
Thermal Resistance , Junction to Ambient ^(Note 2)	$R_{\theta JA}$	550	°C/W
Junction Temperature	T_J	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	°C

NOTES : 1.FR-5 board 1 x 0.75 x 0.062 in.

2.Mounted on a FR4 PCB, single-sided copper, mini pad.

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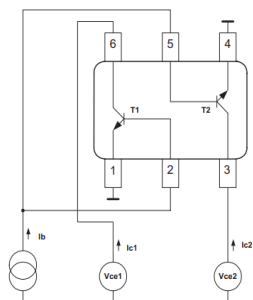
ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Collector - Emitter Breakdown Voltage	V _{(BR)CEO}	I _C =10mA	45	-	-	V
Collector - Emitter Breakdown Voltage	V _{(BR)CES}	I _C =10μA, V _{EB} =0	50	-	-	V
Collector - Base Breakdown Voltage	V _{(BR)CBO}	I _C =10μA	50	-	-	V
Emitter - Base Breakdown Voltage	V _{(BR)EBO}	I _E =1μA	6	-	-	V
Collector Cutoff Current	I _{CBO}	V _{CB} =30V, V _{CB} =30V, T _A =150°C	-	-	15 5	nA μA
ON CHARACTERISTICS						
DC Current Gain	h _{FE}	I _C =2mA, V _{CE} =5V	200	-	450	-
h _{FE} matching ^(Note 3)	h _{FE1} /h _{FE2}	I _C =2mA, V _{CE} =5V	0.86	1	-	-
Base-emitter voltage matching ^(Note 4)	V _{BE1} -V _{BE2}		-	-	2	mV
IC matching ^(Note 5)	ΔI _C	I _B =1μA, V _{CE1} =V _{CE2} =1V	-10	-	10	%
		I _B =100μA, V _{CE1} =V _{CE2} =1V	-10	-	10	%
Collector - Emitter Saturation Voltage	V _{CE(SAT)}	I _C =10mA, I _B =0.5mA I _C =100mA, I _B =5mA	-	-	0.25 0.6	V
Base - Emitter Saturation Voltage	V _{BE(SAT)}	I _C =10mA, I _B =0.5mA I _C =100mA, I _B =5mA	0.6 0.8	-	0.9 1	V
Base - Emitter Voltage	V _{BE(ON)}	I _C =2mA, V _{CE} =5V I _C =10mA, V _{CE} =5V	580 -	660 -	700 770	mV
SMALL-SIGNAL CHARACTERISTICS						
Current-Gain-Bandwidth Product	f _T	I _C =10mA, V _{CE} =5Vdc, f=100MHz	100	-	-	MHz
Output Capacitance	C _{obo}	V _{CB} =10V, f=1MHz	-	-	4.5	pF
Noise Figure	NF	I _C =0.2mA, V _{CE} =5Vdc, R _g =2kΩ, f=1.0kHz, BW=200Hz	-	-	10	dB

NOTES : 3.The smaller of the two values is taken as the numerator.

4.The smaller of the two values is subtracted from the larger value.

5.ΔI_C=(I_{C2}-I_{C1})/I_{C1}



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ELECTRICAL CHARACTERISTICS CURVE

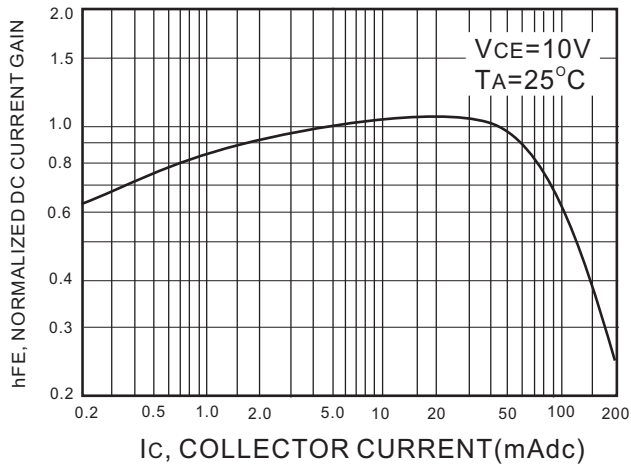


Figure 1. Normalized DC Current Gain

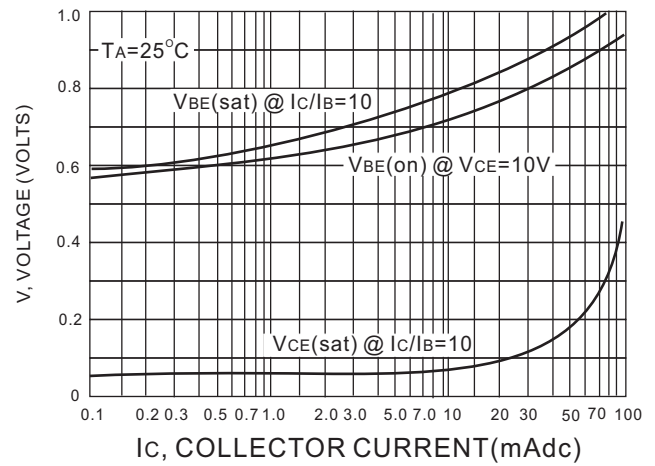


Figure 2. "Saturation" and "On" Voltages

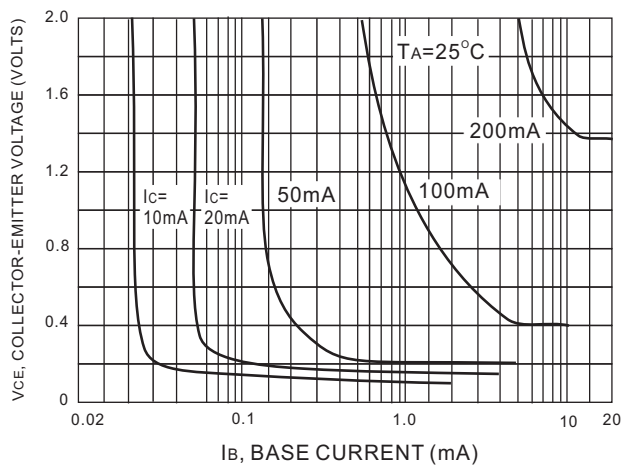


Figure 3. Collector Saturation Region

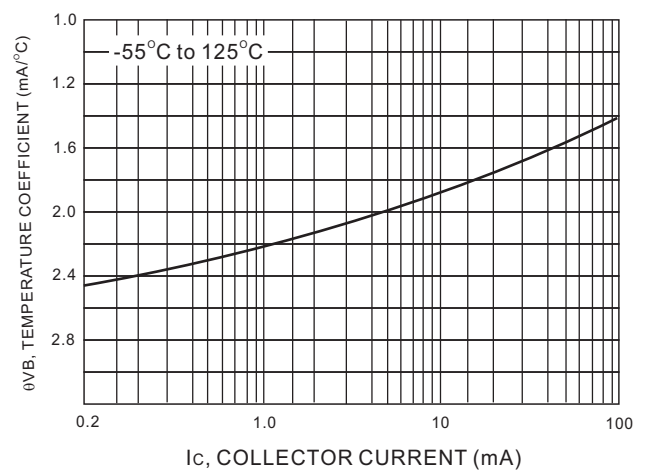


Figure 4. Base-Emitter Temperature Coefficient

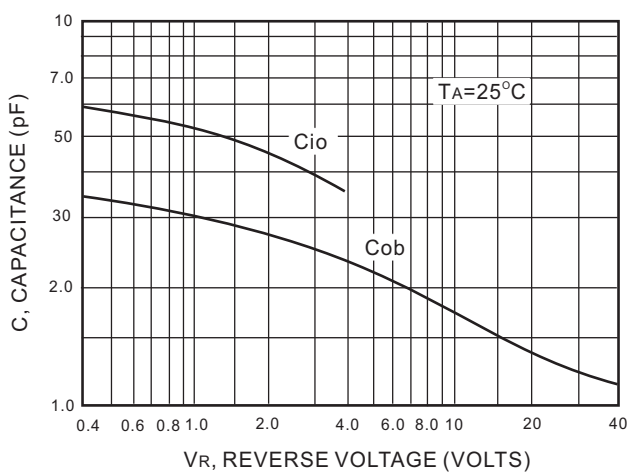


Figure 5. Capacitance

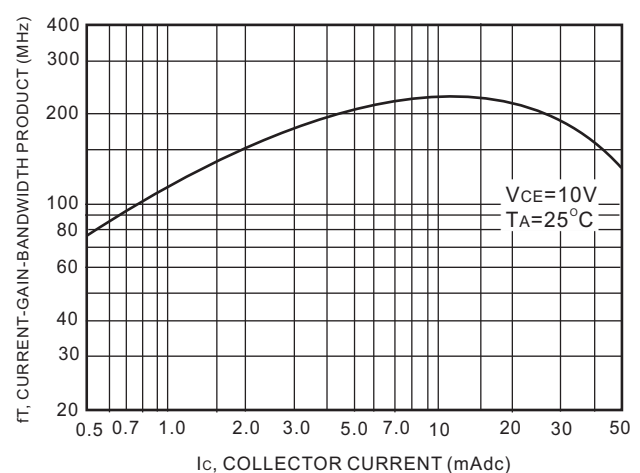


Figure 6. Current-Gain-Bandwidth Product

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ELECTRICAL CHARACTERISTICS CURVE

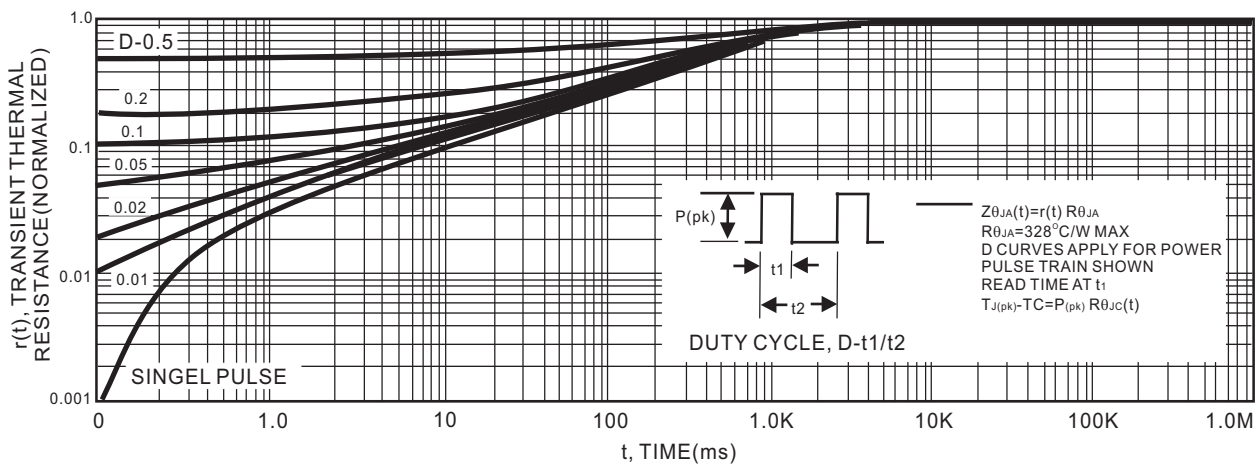


Figure 7. Thermal Response

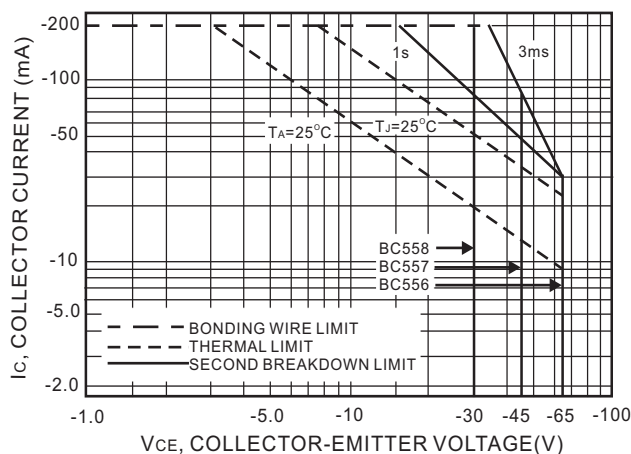


Figure 8. Active Region Safe Operating Area

The safe operating area curves indicate I_C - V_{CE} limits of the transistor that must be observed for reliable operation. Collector load lines for specific circuits must fall below the limits indicated by the applicable curve.

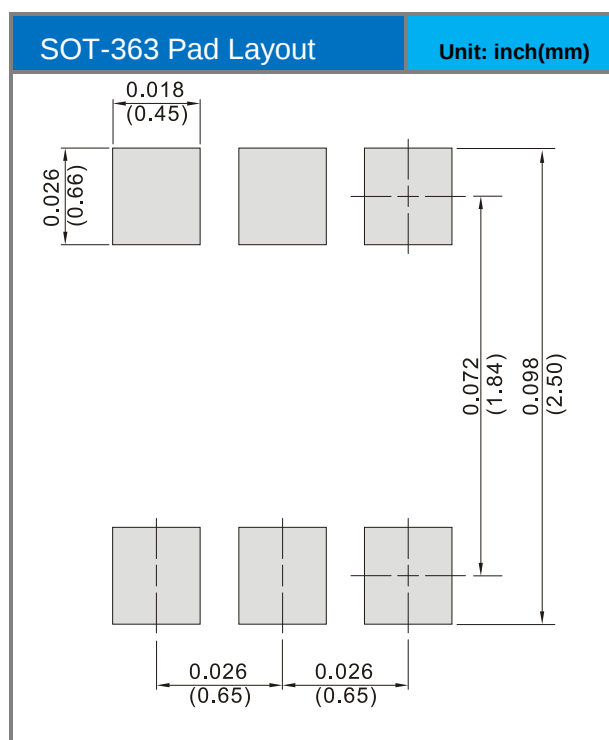
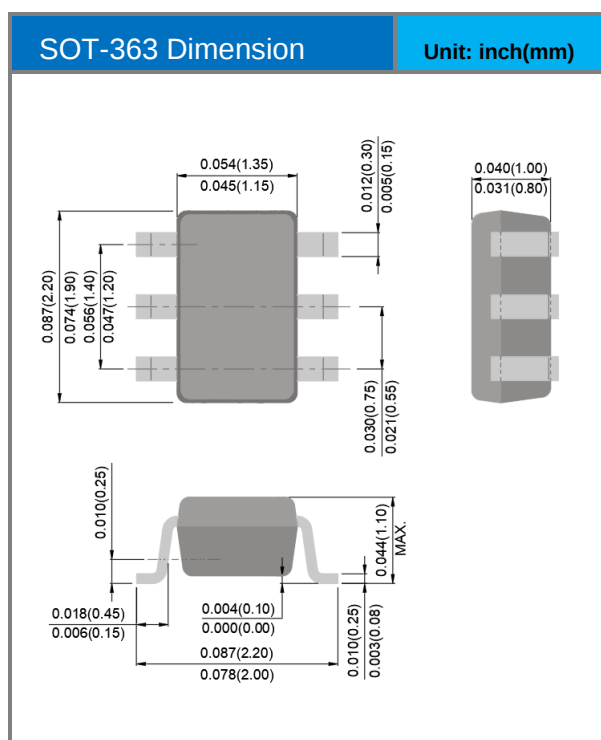
The data of Figure 26 is based upon $T_J(pk) = 150^\circ\text{C}$; T_C or T_A is variable depending upon conditions. Pulse curves are valid for duty cycles to 10% provided $T_J(pk) < 150^\circ\text{C}$. $T_J(pk)$ may be calculated from the data in Figure 25. At high case or ambient temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by the secondary break-down.

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Product and Packing Information

Part No.	Package Type	Packing Type	Marking
BCM847BS	SOT-363	3K pcs / 7" reel	47M

Packaging Information & Mounting Pad Layout



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